

An aerial photograph of a coastal wetland or marsh system. The landscape is characterized by a complex, interconnected network of dark blue water channels and shallow pools, which meander through vast, irregular patches of bright green vegetation. The vegetation appears to be dense marsh grass or similar wetland plants. In the upper portion of the image, a more continuous line of green forest borders the wetland area. The overall scene depicts a healthy, dynamic ecosystem with high biodiversity.

BAY

ERTP Objectives

- To improve conditions for the Everglade snail kite, wood stork and other wading birds and their habitats in WCA-3A
- To maintain nesting season requirements for the Cape Sable seaside sparrow
- To maintain other C&SF project purposes

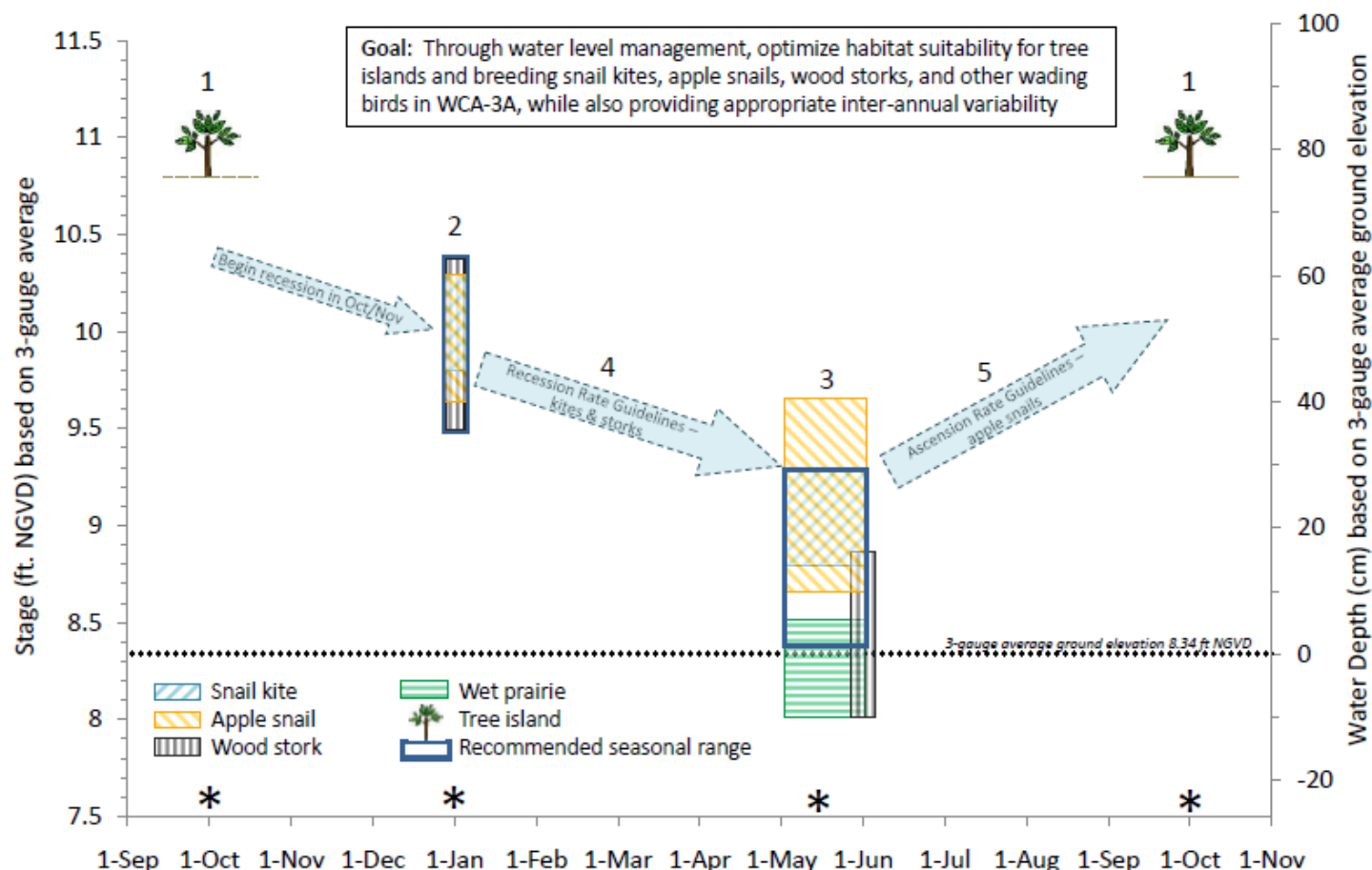
ERTP Process

- ERTTP is an ESA consultation with FWS
- Affected agencies were included in meetings in effort to address their concerns prior to release of NEPA documents
- Meetings between USACE and FWS returned to consultation protocol, with periodic informational briefings to agencies, due to time constraints

FWS Multi-Species Transition Strategy

USFWS Multi-Species Transition Strategy for WCA-3A

Draft July 1, 2010



ERTP Paradigm Shift

- USFWS developed a Multi-Species Transition Strategy for WCA-3A
- ERTP Includes Consideration of New Information
 - Current climate conditions
 - Project specific performance measures
 - Observed species data (1998-2009)
 - Periodic Scientist Calls
 - WCA-3A Spreadsheet Analysis (based on PSC recommendations and current climate conditions)

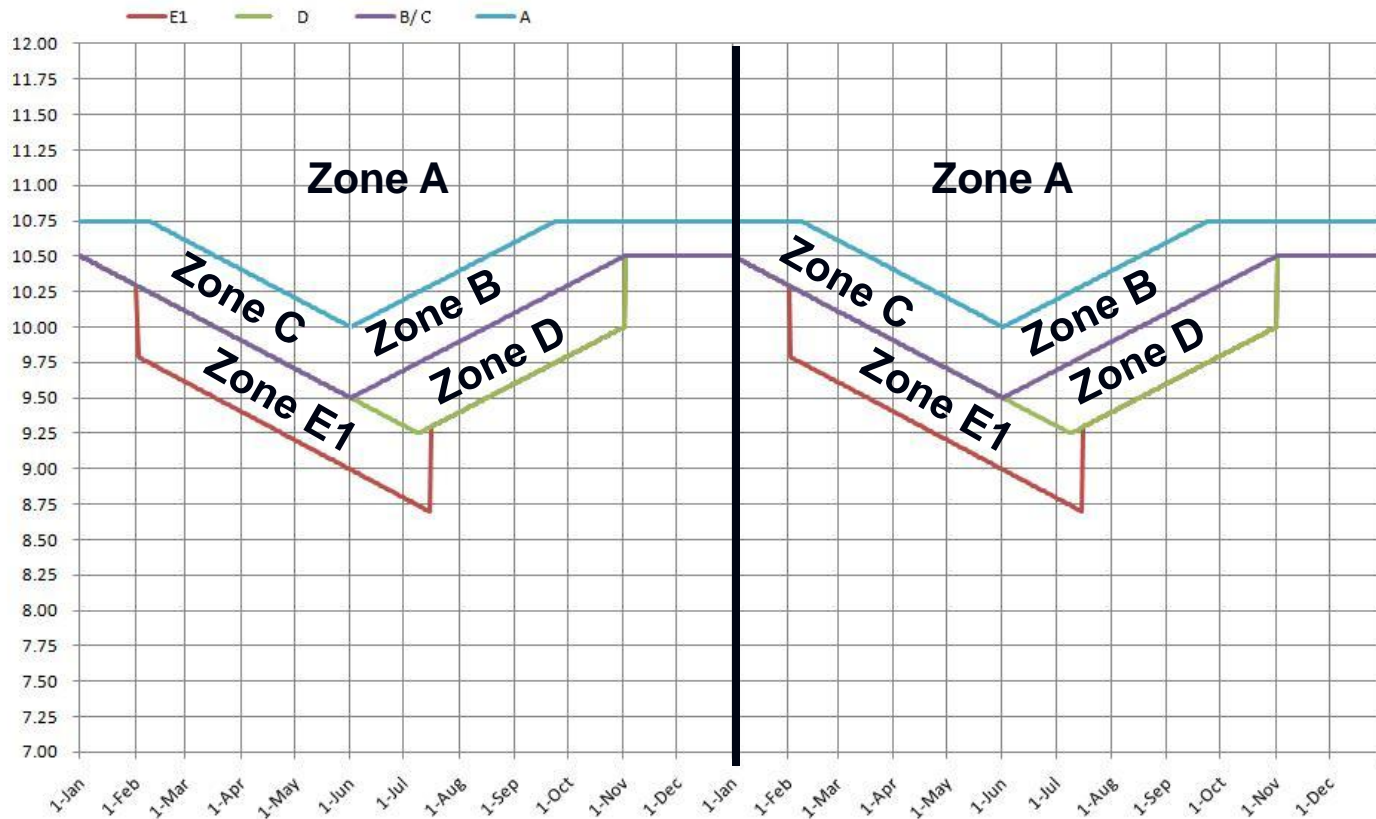
Final Array for Analysis

SFWMM 2x2: Version Used

- USACE SFWMM Modeling first initiated in July 2010 as an investigation of the potential effects of lowering WCA-3A regulation schedule
 - Investigation scope was not envisioned as part ERTTP at that time
- USACE guidance received on 17AUG10: Lowering the top of the WCA-3A regulation schedule was to be incorporated as interim criteria via ERTTP
 - WCA-3A design changes and increased SPF stages documented in 09SEPT10 Memorandum from USACE Water Resources Engineering Chief
 - Original ERTTP scope (Spring 2009-Aug. 2010) did not include SFWMM modeling of alternatives; no prior effort was undertaken to plan with USACE/IMC for this possibility
 - SFWMM modeling for ERTTP completed in ~1.5 weeks to meet project schedule
- Version 5.5.2.2 (Unix), as used for LORRS modeling (2006)
 - Valid SFWMM tool was utilized, enabling relative comparisons

IOP Regulation Schedule

LORRS WCA-3A Regulation Schedule (Current IOP)



SELECTED PLAN

Alternative: Run 9E1

- Similar to IOP Regulation Schedule, with the following exceptions:
 - Revised Regulation Schedule – Zone A at 9.5/10.5
 - Zone D expanded forward to 31 December;
 - Zone E1 expanded backwards to 01 January
- IOP closure dates for S-12A and S-12B
- No closure dates for S-12C and S-12D
- S-151 regulatory releases in zones A, D and E1

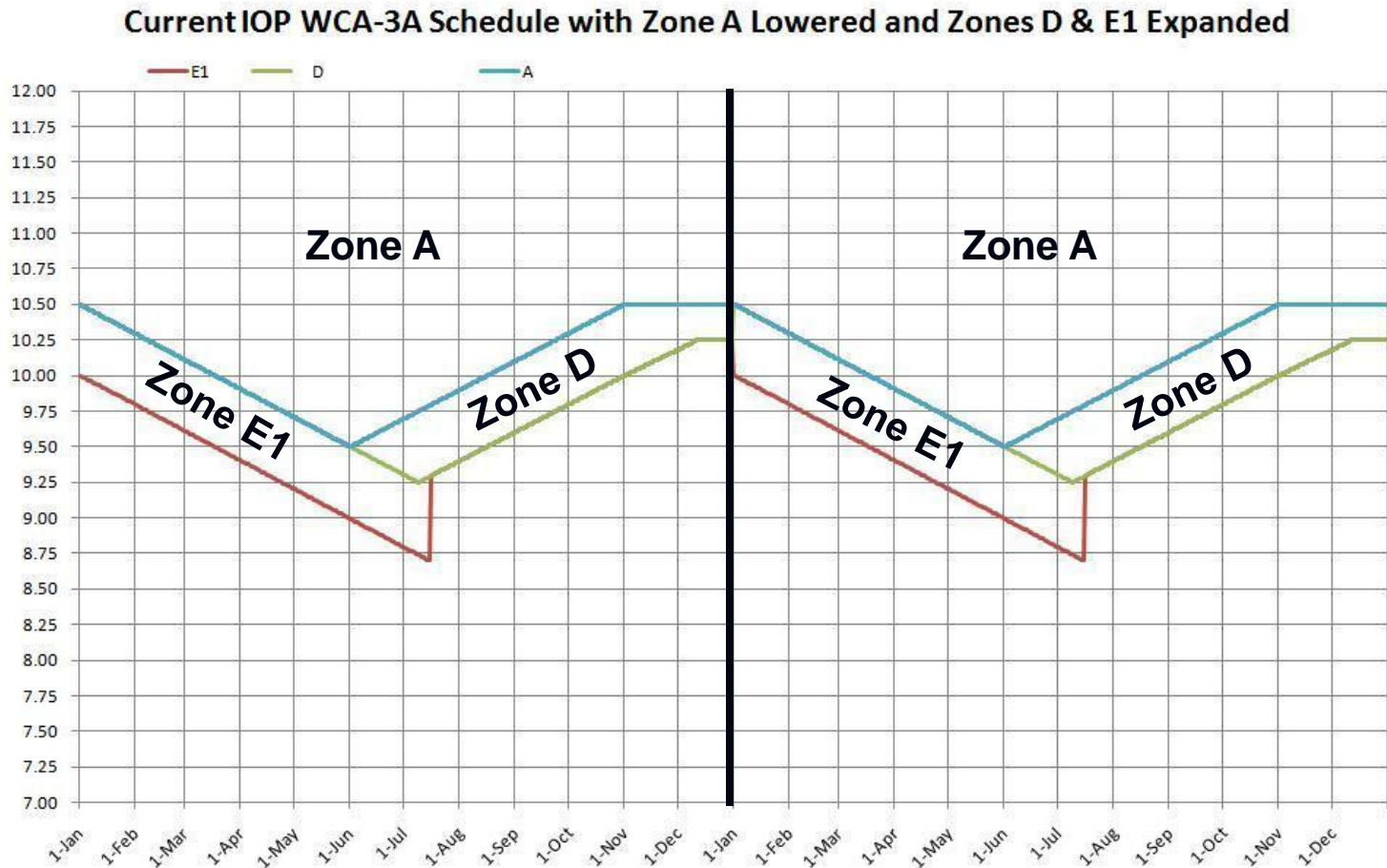
SELECTED PLAN

Alternative: Run 9E1

- S-343A&B, S-344 maintain IOP seasonal closure periods
- Increased S-333 flow targets into NESRS during the dry season (80% to east, 20% to west)
- Tram Road stoppers
- S-346 open when S-12D is open for Rainfall Plan targets
- WCA-3A regulatory coefficient increased to 5000 cfs/foot above the base of the lowest regulatory zone (July-December)
 - IOP includes regulatory coefficient of 2500 cfs/foot (January – December)
- No inclusion of C-111 marsh operations restrictions
- Maximum WCA-3A stage for Lake O. regulatory releases to WCA-3A when Lake O. stage above the low sub-band set at 10.5 ft NGVD
 - IOP cuts off Lake O. inflows to WCA-3A when WCA-3A stage exceeds 10.75
- Manage for MSTs Recession and Ascension Rates
- Periodic Scientist Calls

SELECTED PLAN

Regulation Schedule



Spreadsheet Analysis

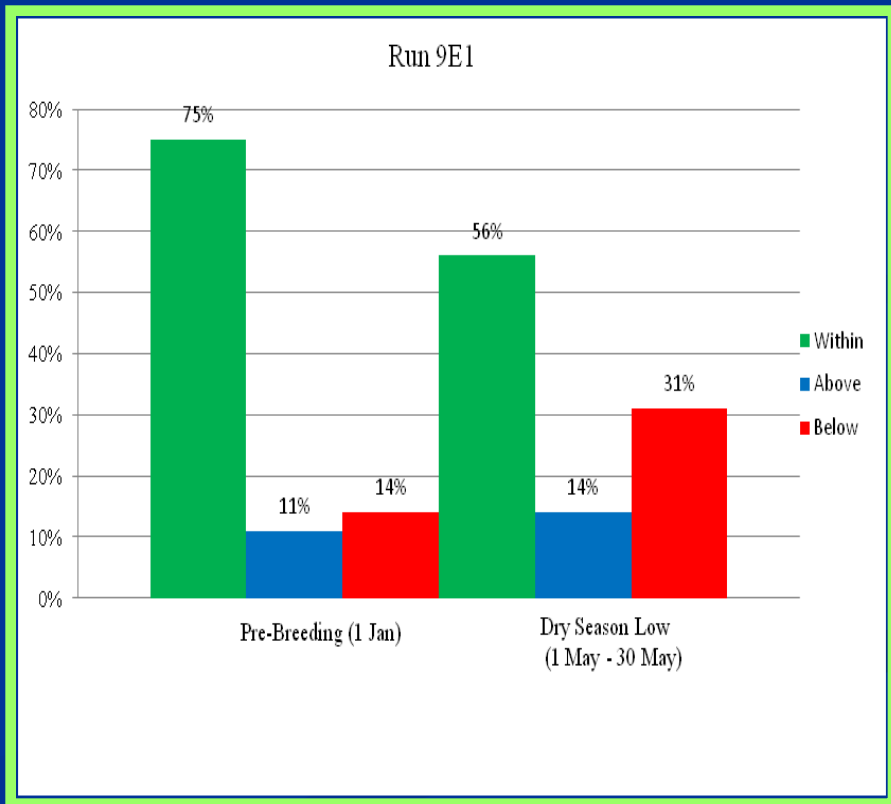
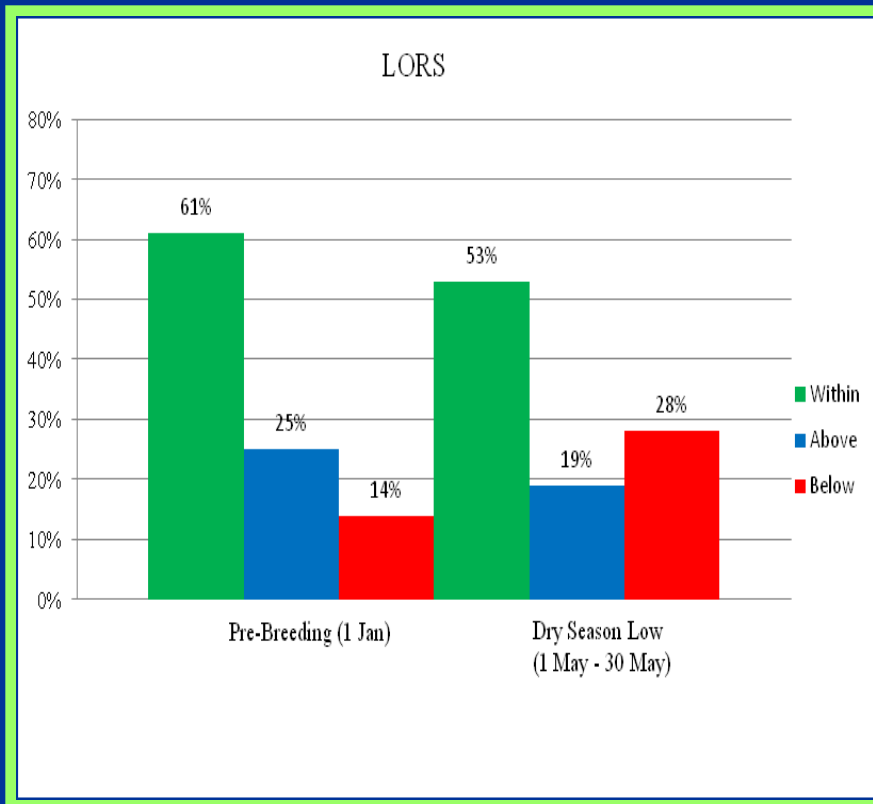
- Spreadsheet was not utilized in determination of Selected Plan
- Spreadsheet will be utilized to further define ERTTP operational flexibility for the Selected Plan, to allow adaptive management of WCA-3A recession rates for the benefit of protected species
 - Based upon Periodic Scientists Call recommendations, including MSTs considerations
 - Analysis will be fully documented in the ERTTP EIS
- Spreadsheet does show potential flexibility, but must be based on Periodic Scientists Call recommendations and hydrologic conditions

Ecological Measures

- Ecological Performance Measures developed for the E RTP project
- Selected Plan was chosen based on ecological performance as compared to other Alternatives
- This presentation provides a representative overview of the analysis completed

SFWMM Model Run Results: MSTS Depths

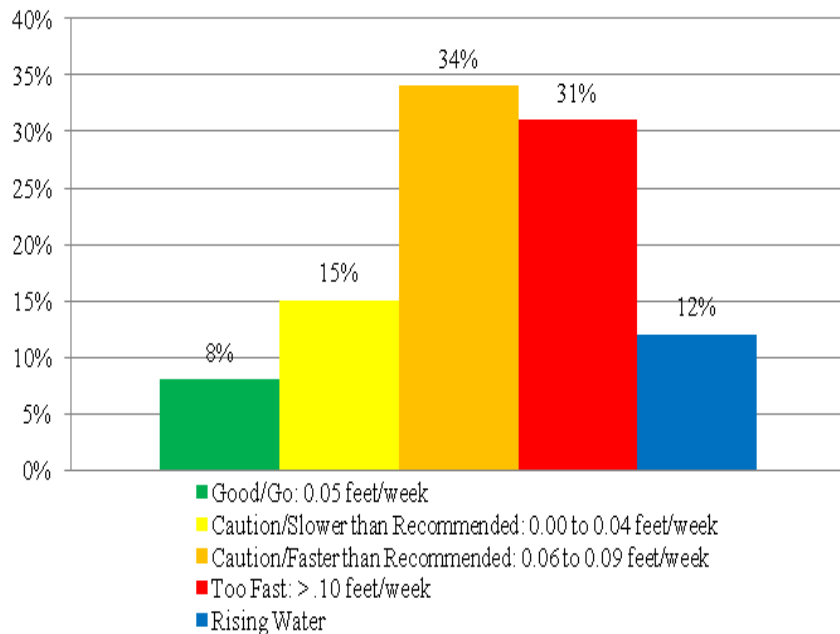
Percentage of Years in which WCA-3A water depths are within, above or below the FWS Multi-Species Transition Plan recommended depth range.



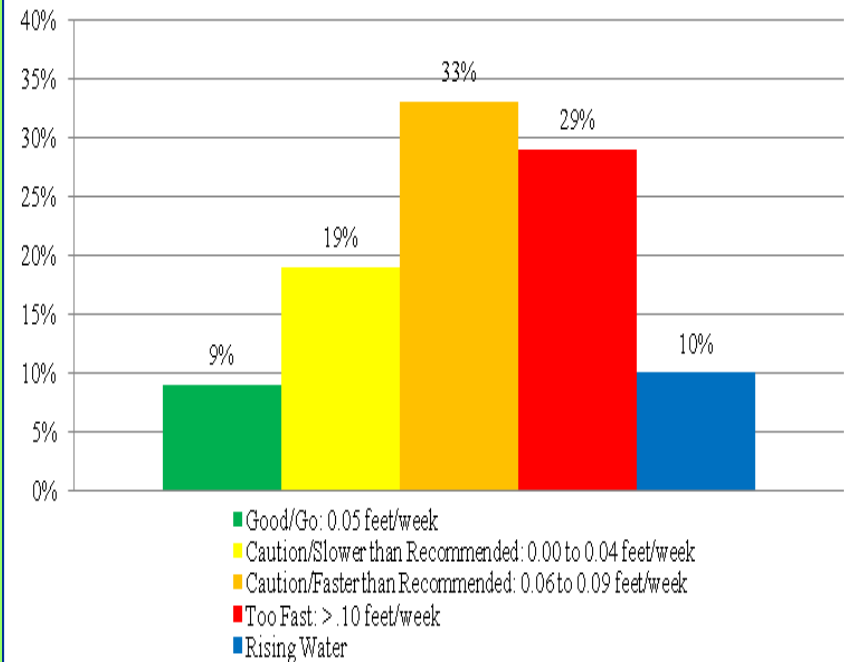
SFWMM Model Run Results: Snail Kite

Percentage of Months when the WCA-3AVG January 1 to June 1 Average Weekly Recession Rate was within the Recommended Range for the Snail Kite. (N=180)

LORS

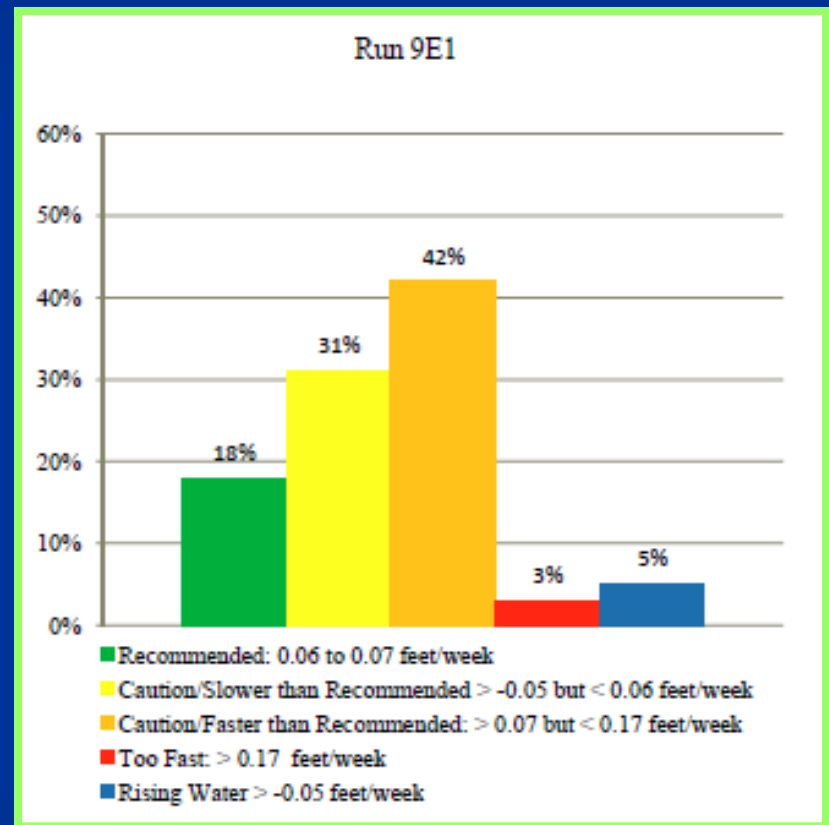
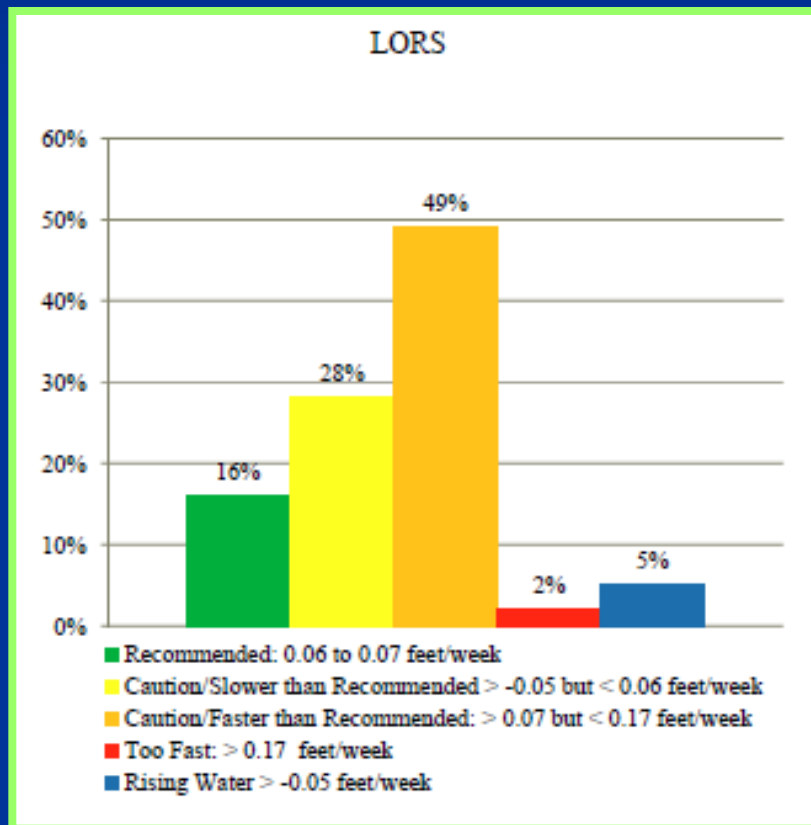


Run 9E1



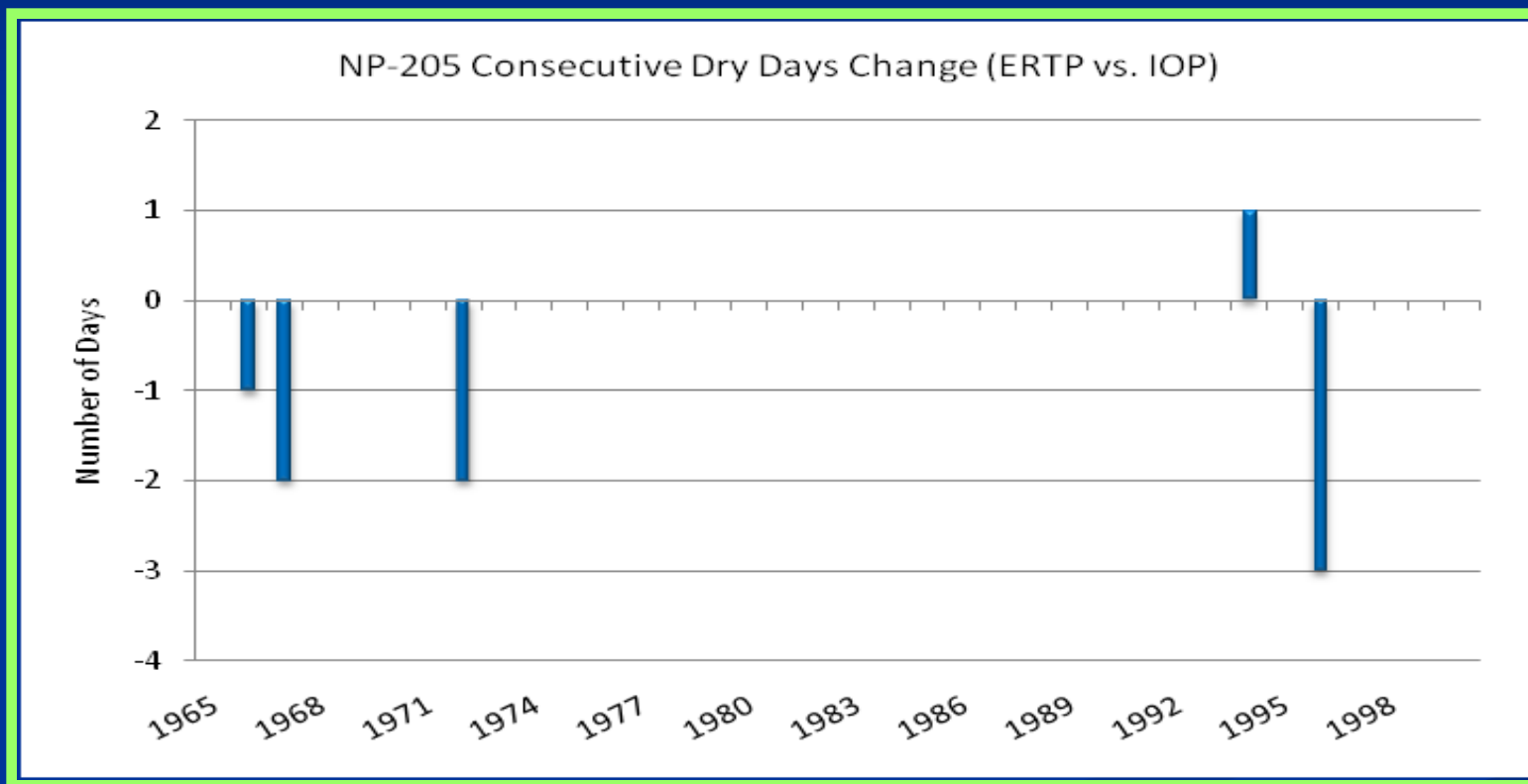
SFWMM Model Run Results: Wood Stork

Percentage of Months when the WCA-3AVG January 1 to June 1 Average Weekly Recession Rate was within the Recommended Range for the Wood Stork. (N=180)



SFWMM Model Run Results: CSSS-A

Change in NP-205 number of consecutive dry days during the CSSS nesting window (March 1- July 15) with implementation of ERTTP-1. Blue bars represent the change in the number of consecutive dry days at NP-205 as compared with IOP.



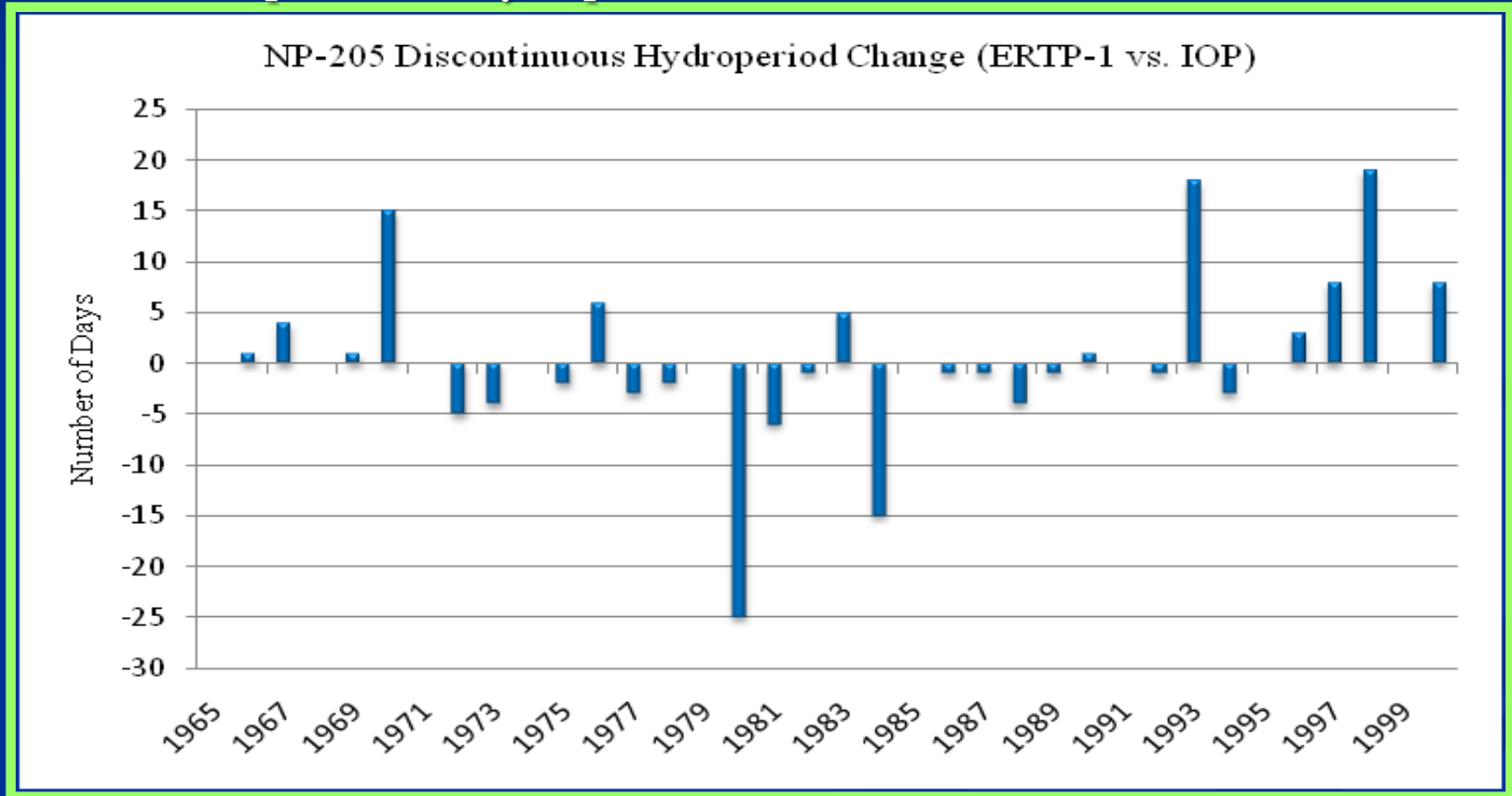
FWS RPA MET?
1 Year Difference: 1996

IOP: 67% of Years
IOP= 60 days

ERTTP: 64% of Years
ERTTP=57 days

SFWMM Model Run Results: Hydroperiod

Change in NP-205 Discontinuous Hydroperiod with implementation of E RTP. Blue bars represent the number of days in which the NP-205 hydroperiod would increase or decrease as compared with hydroperiods under IOP .



Increase: 33% of Years

Decrease: 42% of Years

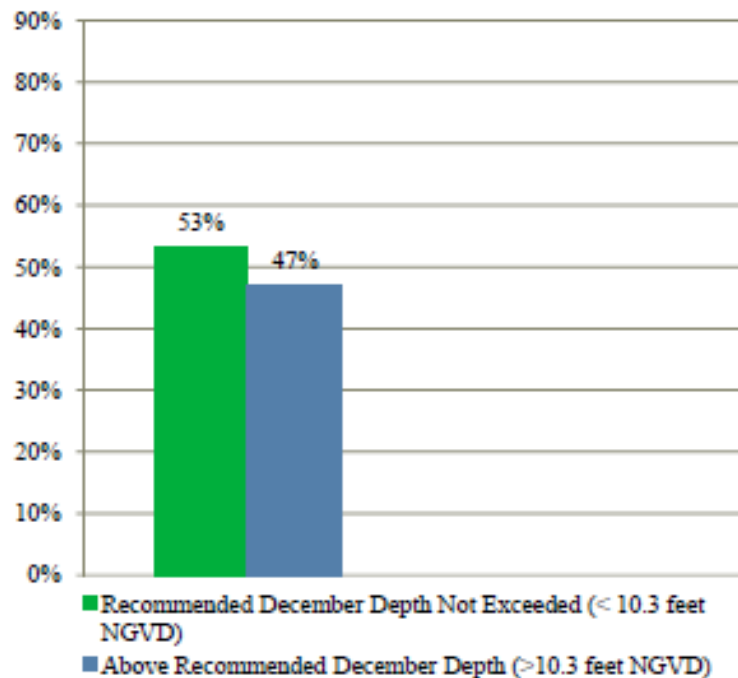
No Change: 25% of Years

Total Increase in Hydroperiod for 36 Year POR= 15 days (0.02%)

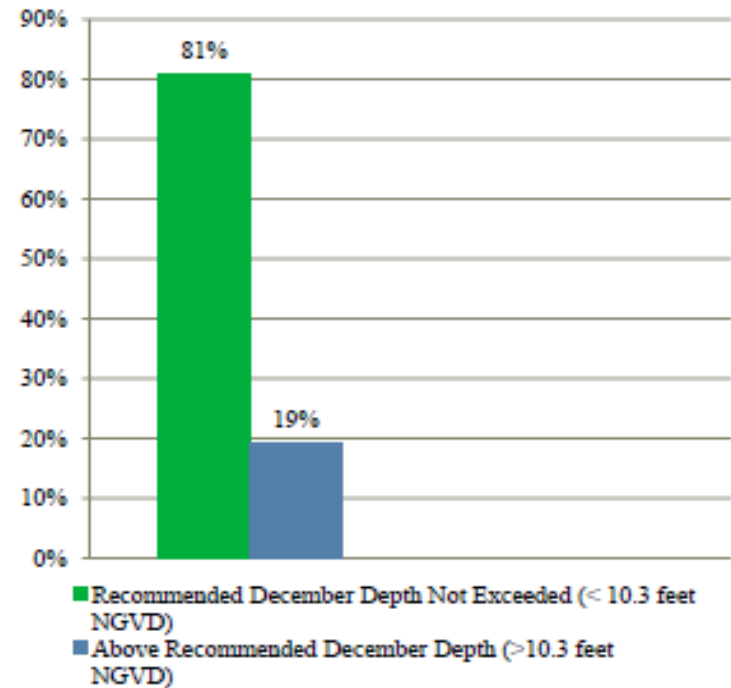
SFWMM Model Run Results: Tree Islands

Percentage of Years in which Water Levels (WCA-3AVG) were below 10.3 feet NGVD by December 31 in WCA-3A. (N=36)

LORS



Run 9E1

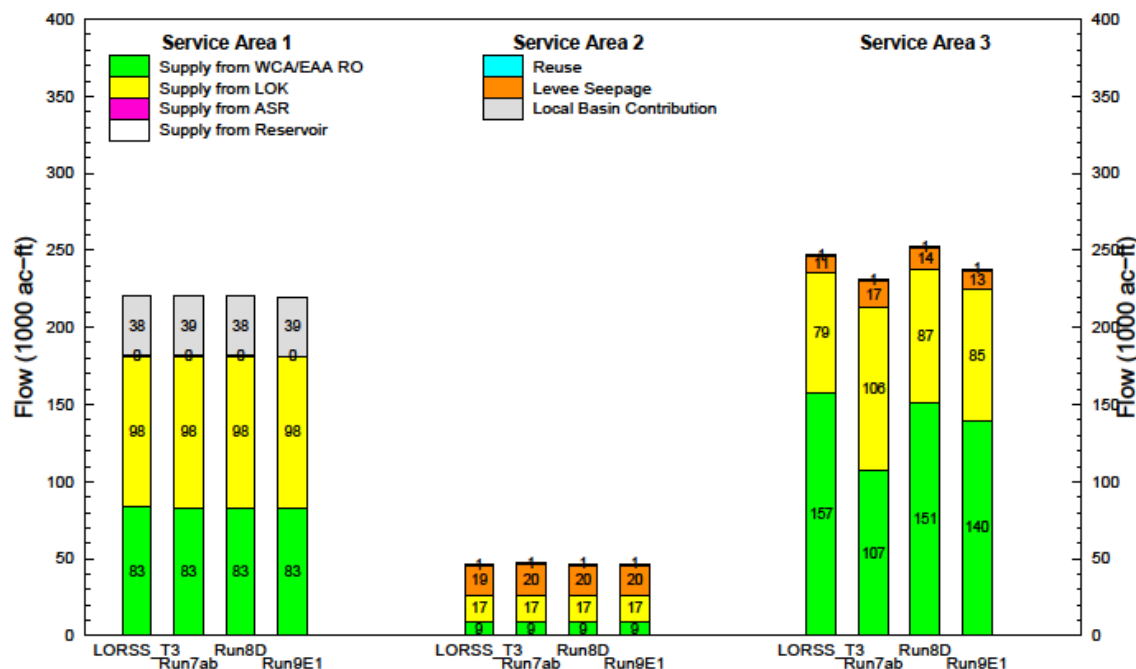


Water Supply

- An assessment of Water Supply performance was included with the evaluation of Alternatives

SFWMM Model Run Results: Water Supply

Average Annual Regional System Water Supply Deliveries to LEC Service Areas for selected drought years (71,75,81,85,89)



Note: Supply RECEIVED from LOK may be less than what is DELIVERED at LOK due to conveyance constraints.
Regional System is comprised of LOK and WCAs.

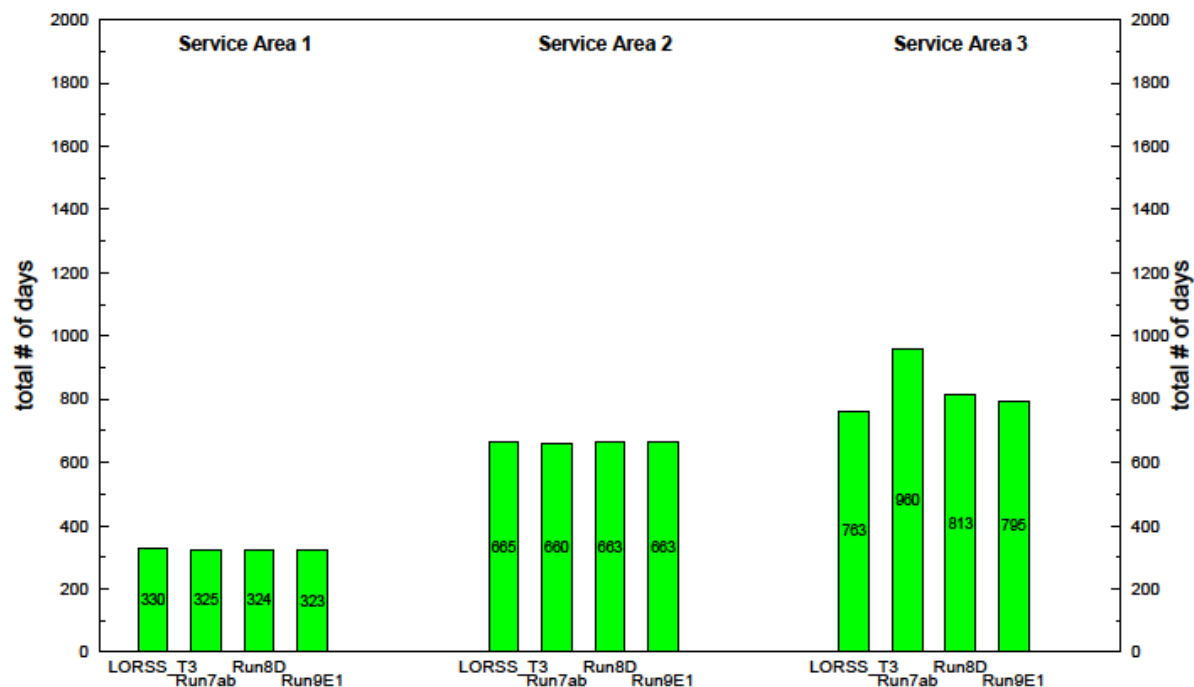
For Planning Purposes Only
Run date: 08/24/10 20:37:41
SFWMM V5.5.2.2
Script used: wsupp2sa_comp.scr, V1.3
Filename: leo_ws_droughts_bar.tif

LECSA3 Water
Supply from Lake
Okeechobee:

Run7ab: + 34%
Run8D: + 10%
Run9E1: + 8%

SFWMM Model Run Results: Water Supply

Number of Days LECSA (SA1, SA2 & SA3) Water Supply Deliveries were made from Lake Okeechobee for 1965 – 2000 Simulation



For Planning Purposes Only
Run date: 06/24/10 20:35:29
SFWMM V5.5.2.2
Script used: lok_wsDeliv2Lecca.scr, V1.5
Filename: lok_wsdeliv2lecca_count.tif

LECSA3 Water Supply from Lake Okeechobee:

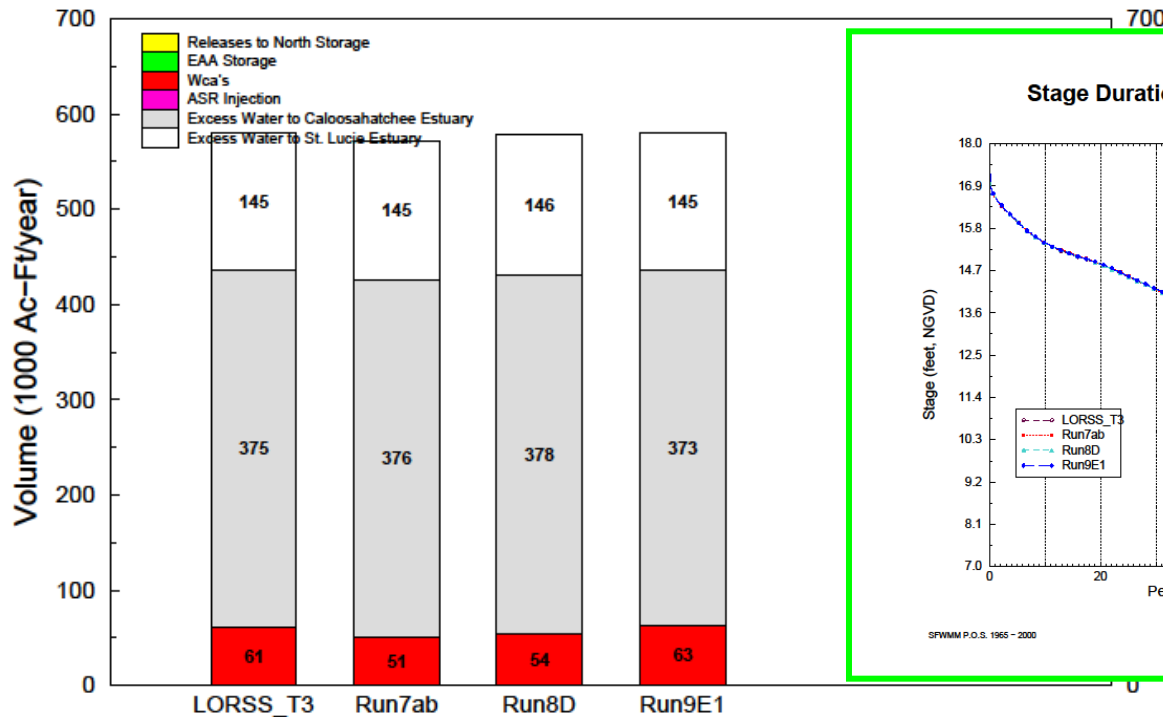
Run7ab: + 26%

Run8D: + 7%

Run9E1: + 4%

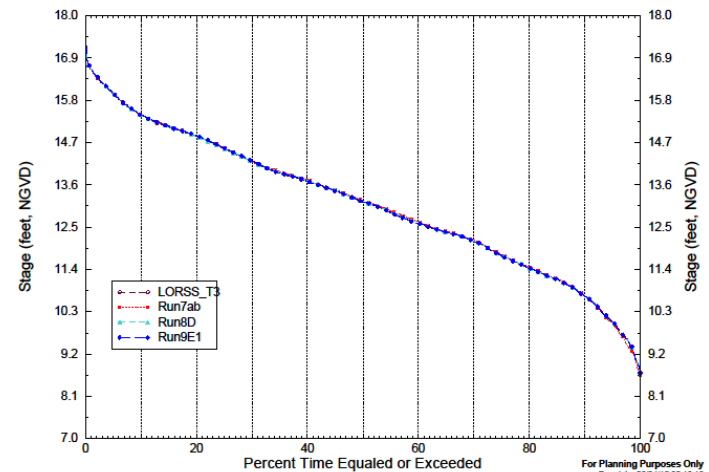
SFWMM Model Run Results: Lake O.

Mean Annual Flood Control Releases from Lake Okeechobee for the 36 yr (1965 – 2000) Simulation



Note: Although regulatory (flood control) discharges are summarized here in mean annual values, they do not occur every year. Typically they occur in 2–4 consecutive years and may not occur for up to 7 consecutive years.

Stage Duration Curves for Lake Okeechobee



SFWMM P.O.S. 1965 – 2000

For Planning Purposes Only

Run date: 08/24/10 20:33:41

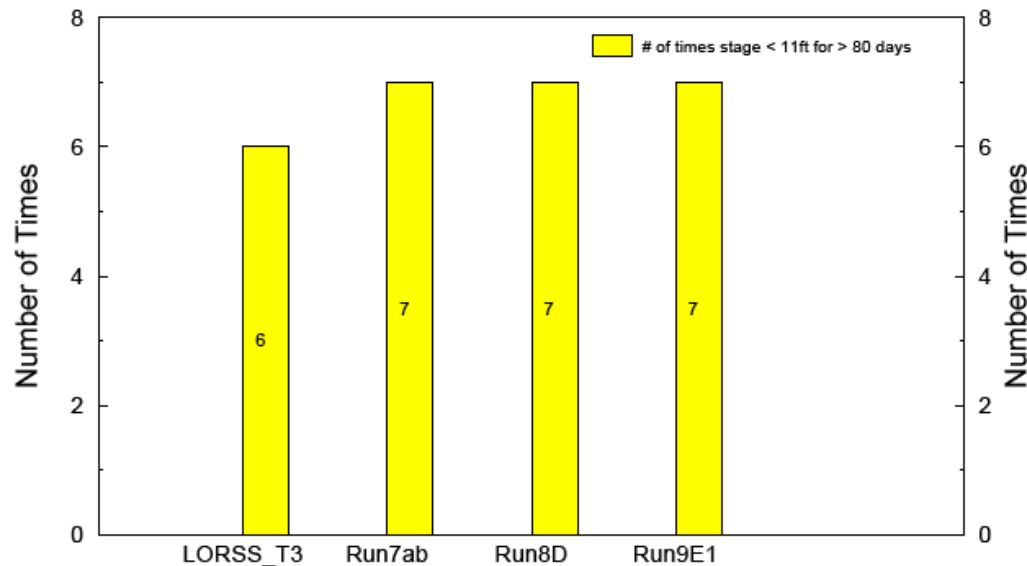
SFWMM V5.5.2.2

Script used: lake_reg_disch.scr, V1.7

Filename: lok_regq_bar.fig

SFWMM Model Run Results: Lake O.

Number of Times LOK Proposed Minimum Water Level & Duration Criteria were Exceeded During the 1965–2000 Simulation



Note:

Target: Minimum Level, duration and Return Frequency – Water levels in Lake Okeechobee should not fall below 11ft NGVD for greater than 80 days more often than once every six years (Target derived from 1952–1995 historical stage data for Lake Okeechobee).

For Planning Purposes Only

Run date: 08/24/10 20:33:35

SFWMM V5.5.2.2

Script used: lok_stage_events.scr, V1.3

Filename: lok_minlvl_bar.tlg

Lake Okeechobee stage below 11 ft., May-July 1971:

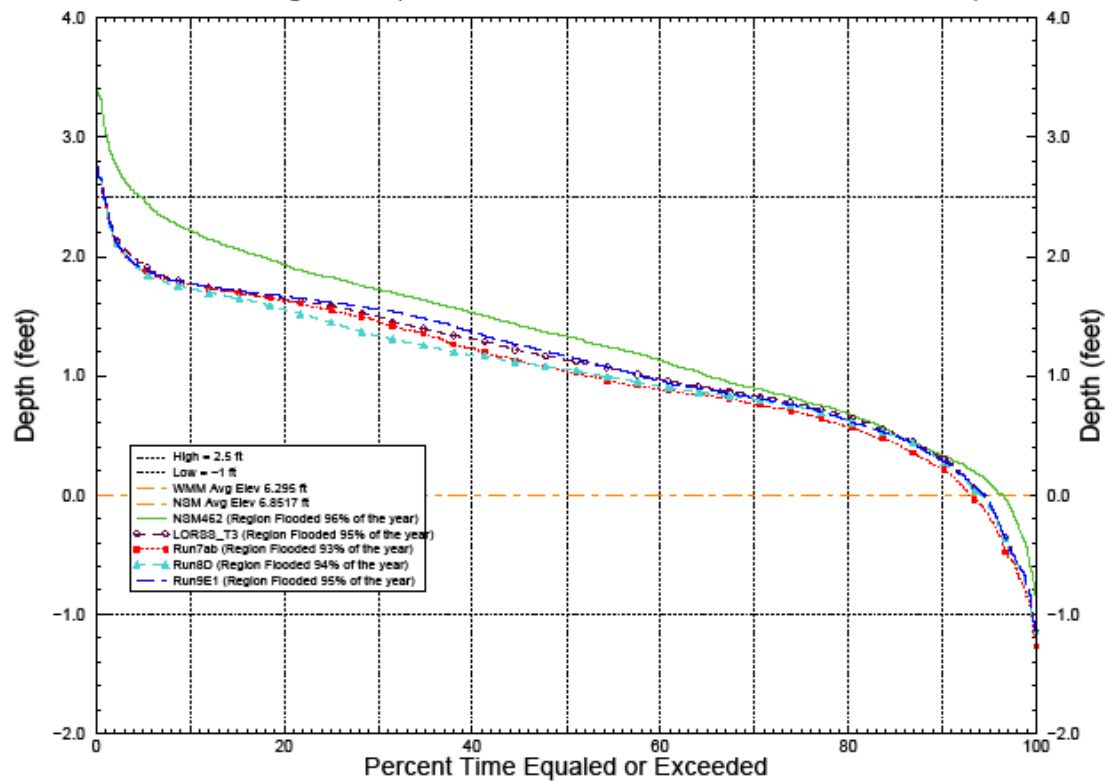
LORSS: 74/77 days (max. stage 11.02)

Run9E1: 80 days

SFWMM Model Run Results: WCA-3B

Normalized Weekly Stage Duration Curves for WCA-3B West

Indicator Region 126 (R23C23-23 R24C23-24 R25C24-25 R26C25-25)



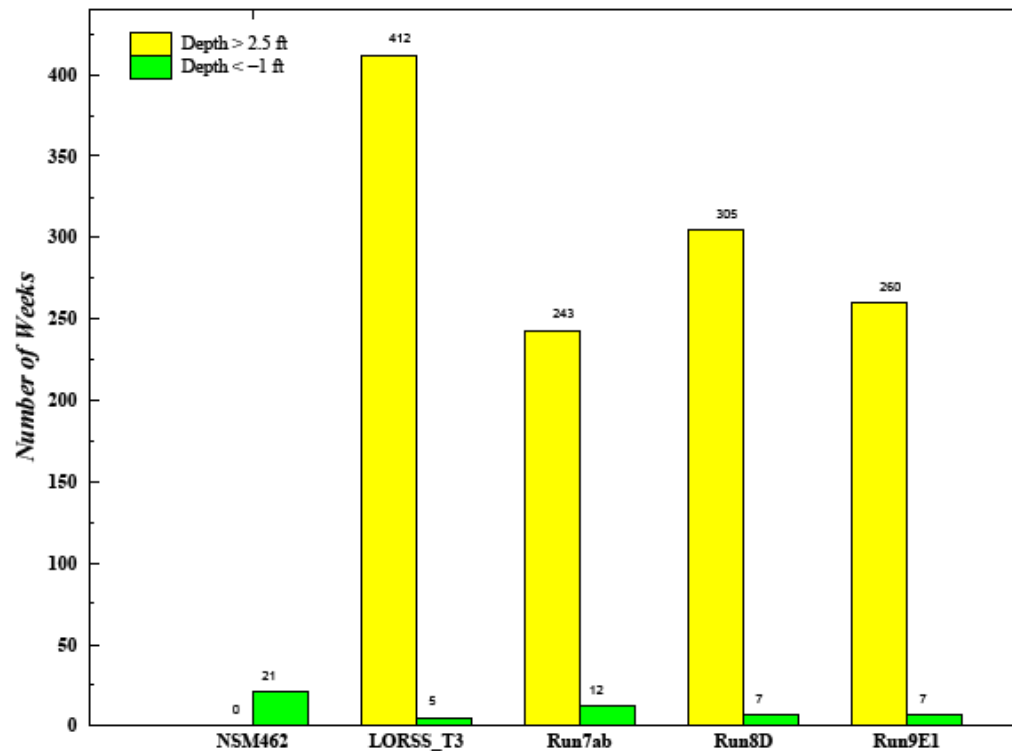
Note: Normalized stage is stage referenced to Land Elevation. Thus, values above zero indicate ponding while values below zero indicate depth to the water table.

Run date: Tue Aug 24 20:32:28 EDT 2010
For Planning Purposes Only
SFWMM V5.5.2.2

SFWMM Model Run Results: WCA-3A

Number of Weeks High/Low Water Depth Criteria Exceeded

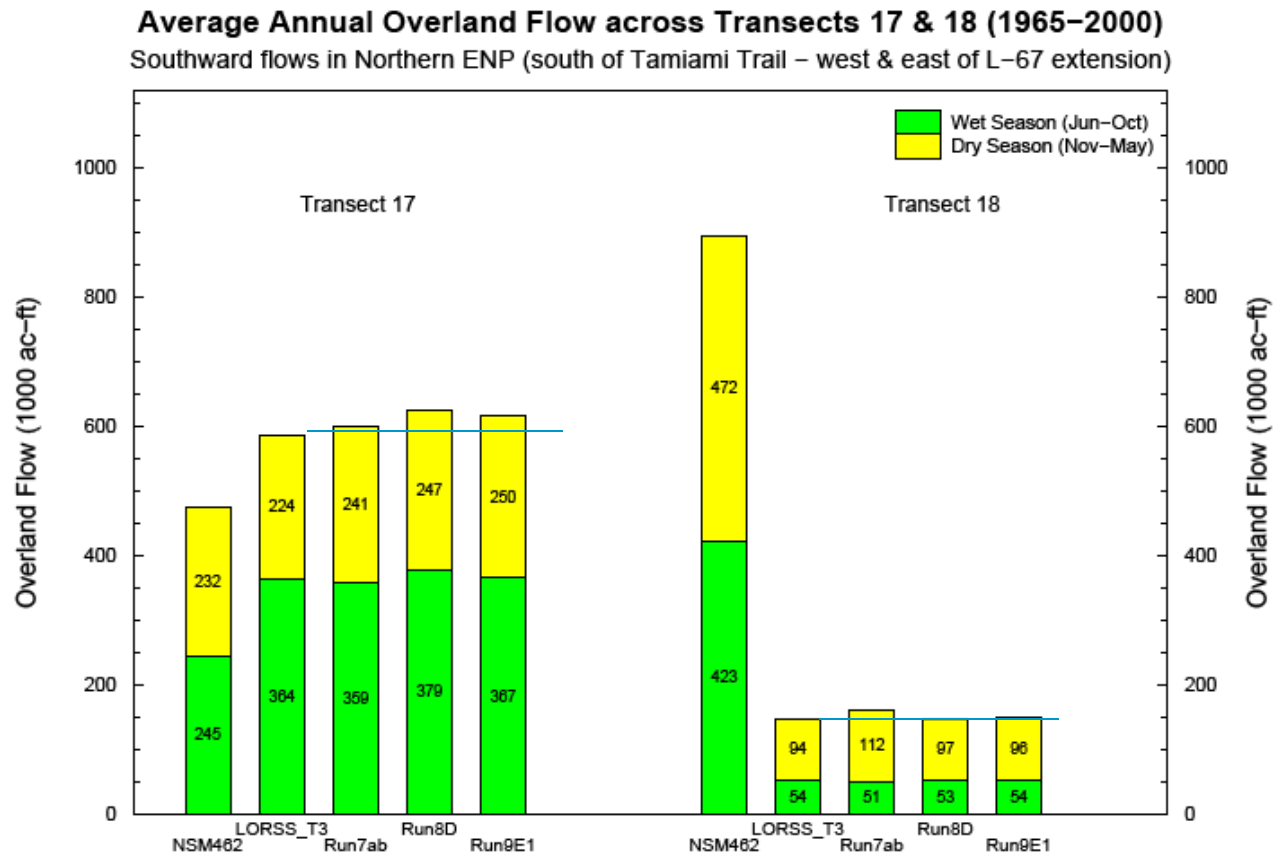
Indicator Region 14 (R23C17-20 R24C17-20 R25C17-21)



Note: The desired condition is to exceed the high water depth as few times as possible and go below the low water depth as few times as possible.

Run date: Tue Aug 24 20:33:06 EDT 2010
For Planning Purposes Only
SFWMM V5.5.2.2

SFWMM Model Run Results: ENP Inflow



Script used: transects_flow.scr, v1.5
Filename: TR17_TR18_ovind_ann_avg_wetdry_bar.fig

For Planning Purposes Only
Run date: 08/24/10 20:31:13
SFWMM v5.5.2.2

Water Quality

- Water quality analysis has been conducted on all alternatives
- Water Quality was not part of plan formulation nor was it used to choose the selected plan
- Special TOC meeting October 19 to discuss the results of the water quality analysis
- ERTP water quality information has been made available to the TOC

ERTP Path Forward

- 19 OCT: TOC Briefing
- 22 OCT: Submit BA to FWS
- 17 NOV: Receive BO from FWS
- 31 DEC: Draft EIS published in Federal Register
- JAN 2011: Public Meeting for Draft EIS
- May 2011: Final EIS



ESS

WCA 3A

WCA 3B

SHARK
RIVER
SLOUGH

BISCAYNE
BAY

Questions?

TAYLOR
SLOUGH

FLORIDA
BAY

NOT TO SCALE
APRIL 2010

